Fig. 1. Synthetic gene for *P. falciparum* FVO strain AMA-1, employing *P. pastoris* codon preference

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          10        20        30        40        50
ATGAGGAAGTTGTACTGCGTTTTGTTGTTGTCTGCTTTCGAGTTCACCTA
 M   R   K   L   Y   C   V   L   L   L   S   A   F   E   F   T   Y>

          60        70        80        90       100
CATGATCAACTTCGGTCGTGGTCAGAACTACTGGGAGCATCCTTACCAGA
 M   I   N   F   G   R   G   Q   N   Y   W   E   H   P   Y   Q>

         110       120       130       140       150
AGTCTGACGTCTACCATCCTATCAACGAACATAGGGAGCATCCTAAGGAA
 K   S   D   V   Y   H   P   I   N   E   H   R   E   H   P   K   E>

         160       170       180       190       200
TACGAATACCCACTGCATCAAGAGCACACTTACCAGCAGGAAGATTCTGG
 Y   E   Y   P   L   H   Q   E   H   T   Y   Q   Q   E   D   S   G>

         210       220       230       240       250
TGAAGATGAAAACACCTTGCAACACGCTTACCCCATCGATCATGAAGGAG
 E   D   E   N   T   L   Q   H   A   Y   P   I   D   H   E   G>

         260       270       280       290       300
CTGAACCAGCCCCTCAGGAACAAAACTTGTTCTCTTCCATCGAAATCGTG
 A   E   P   A   P   Q   E   Q   N   L   F   S   S   I   E   I   V>

         310       320       330       340       350
GAAAGATCCAACTACATGGGTAACCCATGGACTGAGTACATGGCAAAGTA
 E   R   S   N   Y   M   G   N   P   W   T   E   Y   M   A   K   Y>

         360       370       380       390       400
CGACATCGAGGAAGTGCACGGAAGTGGTATCAGGGTTGATCTGGGTGAAG
 D   I   E   E   V   H   G   S   G   I   R   V   D   L   G   E>

         410       420       430       440       450
ATGCCGAAGTCGCTGGTACTCAGTACAGACTCCCTTCTGGTAAGTGCCCT
 D   A   E   V   A   G   T   Q   Y   R   L   P   S   G   K   C   P>

         460       470       480       490       500
GTTTTCGGAAAGGGTATCATCATCGAAAACTCTAAGACTACTTTCCTCAA
 V   F   G   K   G   I   I   I   E   N   S   K   T   T   F   L   K>

         510       520       530       540       550
GCCTGTTGCTACTGGTAACCAAGATCTTAAGGACGGAGGTTTCGCTTTCC
 P   V   A   T   G   N   Q   D   L   K   D   G   G   F   A   F>

         560       570       580       590       600
CACCTACTAACCCTCTGATCTCTCCAATGACTTTGAACGGTATGCGTGAC
 P   P   T   N   P   L   I   S   P   M   T   L   N   G   M   R   D>

         610       620       630       640       650
TTCTACAAGAACAACGAATACGTCAAGAACTTGGATGAATTGACTTTGTG
 F   Y   K   N   N   E   Y   V   K   N   L   D   E   L   T   L   C>
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FIG. 1A

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          660         670         680         690         700
TAGTAGACACGCTGGAAACATGAACCCTGATAACGACAAGAACAGTAACT
   S   R   H   A   G   N   M   N   P   D   N   D   K   N   S   N>

          710         720         730         740         750
ACAAGTACCCCGCGGTTTACGACTACAACGATAAGAAGTGTCACATCCTG
   Y   K   Y   P   A   V   Y   D   Y   N   D   K   K   C   H   I   L>

          760         770         780         790         800
TACATCGCTGCCCAAGAAAACAACGGACCAAGATACTGTAACAAGGATCA
   Y   I   A   A   Q   E   N   N   G   P   R   Y   C   N   K   D   Q>

          810         820         830         840         850
AAGTAAGAGAAACTCTATGTTCTGTTTCAGACCTGCAAAGGACAAGCTGT
   S   K   R   N   S   M   F   C   F   R   P   A   K   D   K   L>

          860         870         880         890         900
TCGAAAACTACGTGTACTTGTCCAAGAACGTTGTCGATAACTGGGAAGAA
   F   E   N   Y   V   Y   L   S   K   N   V   V   D   N   W   E   E>

          910         920         930         940         950
GTCTGCCCAAGAAAGAACCTCGAGAACGCAAAGTTCGGTCTGTGGGTCGA
   V   C   P   R   K   N   L   E   N   A   K   F   G   L   W   V   D>

          960         970         980         990         1000
TGGTAACTGTGAAGACATCCCTCATGTGAACGAGTTCAGTGCTAACGATT
   G   N   C   E   D   I   P   H   V   N   E   F   S   A   N   D>

          1010        1020        1030        1040        1050
TGTTCGAGTGTAACAAGCTGGTCTTCGAGTTGTCTGCCAGTGACCAACCT
   L   F   E   C   N   K   L   V   F   E   L   S   A   S   D   Q   P>

          1060        1070        1080        1090        1100
AAGCAGTACGAACAGCATTTGACTGACTACGAAAAGATCAAGGAAGGATT
   K   Q   Y   E   Q   H   L   T   D   Y   E   K   I   K   E   G   F>

          1110        1120        1130        1140        1150
CAAGAACAAGAACGCCGATATGATCAAGTCCGCTTTCCTCCCAACCGGTG
   K   N   K   N   A   D   M   I   K   S   A   F   L   P   T   G>

          1160        1170        1180        1190        1200
CATTCAAAGCAGATAGATACAAGTCTCACGGTAAGGGTTACAACTGGGGA
   A   F   K   A   D   R   Y   K   S   H   G   K   G   Y   N   W   G>

          1210        1220        1230        1240        1250
AACTACAACAGAGAAACCCAAAAGTGTGAAATCTTCAACGTCAAGCCTAC
   N   Y   N   R   E   T   Q   K   C   E   I   F   N   V   K   P   T>

          1260        1270        1280        1290        1300
CTGCCTCATCAACGACAAGTCCTACATTGCGACTACTGCCCTGTCTCATC
   C   L   I   N   D   K   S   Y   I   A   T   T   A   L   S   H>
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FIG. 1B

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        1310        1320        1330        1340        1350
CAATCGAAGTCGAACACAACTTCCCCTGCAGTCTCTACAAGGACGAGATC
 P  I  E  V  E  H  N  F  P  C  S  L  Y  K  D  E  I>

        1360        1370        1380        1390        1400
AAGAAGGAAATCGAGCGTGAAAGTAAGCGTATCAAGTTGAACGATAACGA
 K  K  E  I  E  R  E  S  K  R  I  K  L  N  D  N  D>

        1410        1420        1430        1440        1450
CGACGAAGGTAACAAGAAGATCATCGCACCTAGGATCTTCATCTCCGATG
 D  E  G  N  K  K  I  I  A  P  R  I  F  I  S  D>

        1460        1470        1480        1490        1500
ACAAGGATTCCCTCAAGTGTCCTTGTGACCCTGAGATGGTGAGTCAGTCC
 D  K  D  S  L  K  C  P  C  D  P  E  M  V  S  Q  S>

        1510        1520        1530        1540        1550
ACTTGTAGATTCTTCGTTTGCAAGTGCGTCGAACGTAGAGCCGAAGTCAC
 T  C  R  F  F  V  C  K  C  V  E  R  R  A  E  V  T>

        1560        1570        1580        1590        1600
TAGTAACAACGAAGTTGTCGTGAAGGAAGAATACAAGGATGAATACGCTG
 S  N  N  E  V  V  V  K  E  E  Y  K  D  E  Y  A>

        1610        1620        1630        1640        1650
ATATTCCAGAGCATAAGCCTACGTACGATAACATGAAGATCATCATCGCT
 D  I  P  E  H  K  P  T  Y  D  N  M  K  I  I  I  A>

        1660        1670        1680        1690        1700
AGTTCTGCTGCTGTCGCTGTTCTGGCTACTATCCTCATGGTGTACCTTTA
 S  S  A  A  V  A  V  L  A  T  I  L  M  V  Y  L  Y>

        1710        1720        1730        1740        1750
CAAGAGAAAGGGAAACGCTGAGAAGTACGACAAGATGGATCAACCTCAAC
 K  R  K  G  N  A  E  K  Y  D  K  M  D  Q  P  Q>

        1760        1770        1780        1790        1800
ATTACGGTAAGAGTACTTCCAGGAACGATGAGATGTTGGATCCAGAGGCC
 H  Y  G  K  S  T  S  R  N  D  E  M  L  D  P  E  A>

        1810        1820        1830        1840        1850
TCCTTCTGGGGTGAGGAGAAGAGAGCCTCTCATACTACTCCAGTTTTGAT
 S  F  W  G  E  E  K  R  A  S  H  T  T  P  V  L  M>

        1860
GGAGAAGCCTTACTACTAA
 E  K  P  Y  Y  *>
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FIG. 1C